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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/995,066	11/26/2001	Tracy L. Lentz	HI 0003099 US (H161.112.	9536

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EXAMINER
DICKENS, CHARLENE

ART UNIT	PAPER NUMBER
2855	

DATE MAILED: 09/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/995,066	LENTZ ET AL.	
	Examiner	Art Unit	
	Ex. Dickens	2855	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of tima may be eveileble under the provisions of 37 CFR 1.136(e). In no event, however, may e reply ba timely filed after SIX (6) MONTHS from the meiling deta of this communication.
- If tha period for reply specified ebove is less then thirty (30) days, a reply within the statutory minimum of thirty (30) deys will be considered timely.
- If NO period for reply is specified ebova, the meximum statutory period will epply end will axpira SIX (6) MONTHS from the meiling dete of this communicetion.
- Feilura to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by tha Office later than three months efter the mailing dete of this communication, even if timely filed, may reduca any eerned patent term edjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 November 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "52" has been used to designate both flexible substrate and circuit assembly.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "52" and "100" have both been used to designate flexible substrate.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: 44. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

The disclosure is objected to because of the following informalities: on page 12, lines 2 and 4, "150" should be –50--; and page 17, lines 25, "52" should be –32--. Appropriate correction is required.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3, 6-13, 16, 17, 32, and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olmstead, US Patent 3,931,736, in view of Mickler, US Patent 4,876,887. Regarding claims 1, 17, 30, 32, & 45, Olmstead discloses an airflow

sensor 30 for detecting airflow 16 within an air handling system 14, the airflow sensor/method of detecting airflow with an air handling system including ductwork (col. 1, lines 12-16), comprising: a housing 10 defining an internal compartment 22 and a top face (Fig. 1), the top face forming an opening (Fig. 1); an insulating substrate 46 having circuitry traces 56, a front (Fig. 1), and a back (Fig. 1), the substrate 46 being disposed within the compartment such that the back is exposed relative to the opening in the top face (Fig. 1); and electrical components (40, 42), provided within the ductwork, electrically connected to the circuitry traces (col. 2, lines 35-37) and extending from the front of the substrate opposite the opening (Fig. 1), the electrical components including, since Olmstead describes that each electrical component comprises heating and temperature sensitive elements (col. 2, lines 59, 60), the reference teaches two temperature sensors wherein one may be referred to as a first, heated temperature sensor (col. 2, lines 59, 60), and a second, baseline temperature sensor (col. 2, lines 59, 60), wherein the first and second temperature sensors (40, 42) are spaced from one another (Fig. 2); wherein during use airflow interfaces with the back of the substrate to cool the first temperature sensor, the extent of cooling as compared to the second temperature sensor being indicative of airflow (col. 3, lines 26-33), and further wherein the airflow sensor is configured to limit accumulation of debris (col. 1, lines 20-24) along the back of the flexible substrate (col. 3, lines 23-25). Olmstead does disclose a thin membrane member, which implies flexibility. However, Mickler clearly teaches that such thin membrane15 structures are flexible (col. 2, lines 26,27) for the purpose of providing a substrate within a thermal fluid flowmeter. It would have been obvious to

one having ordinary skill in the art at the time the invention was made to have used a thin insulating substrate in Olmstead as suggested by Mickler for the purpose of providing a substrate within a thermal fluid flowmeter wherein the velocity of the flowing fluid is calculated (col. 2, lines 5-8);

Claim 2: Olmstead discloses wherein the top face forms, the upper outer edges which borders the compartment 22 are deemed as a lip otherwise defining the opening, the opening including an outer dimension less than that of the substrate such that upon final assembly, the back of the substrate abuts the lip (Fig. 1);

Claims 3, 10: Olmstead discloses wherein the airflow sensor is adapted such that upon final assembly (col. 3, lines 11-16), at least a portion of the back of the substrate is substantially flush with the lip (Fig. 1) and wherein upon final assembly, the first and second temperature sensors are aligned with the opening (Fig. 1) since when upon final assembly (col. 3, lines 11-16) the substrate the sensors are on are secured together with the other elements and tapped into holes in the housing 10 (col. 3, lines 11-16) ;

Claim 6: Mickler discloses wherein the flexible substrate 15 is a Kapton flexible circuit (col. 2, lines 27-29);

Claim 7: Olmstead discloses wherein the back of the flexible substrate is substantially smooth since in Fig. 1 it is shown that substrate 46 is a continuous flat plate;

Claim 8: Olmstead discloses wherein the circuitry traces include a first trace 60 electrically connecting the first and second temperature sensors to a common node (Fig. 2);

Claim 9: Mickler discloses wherein the first trace 19 extends in a serpentine fashion (col. 2, lines 29, 30) between the.

Claims 11, 12 & 13: Olmstead is suggestive of the first and second temperature sensors are spaced apart (Fig. 2). Claim 11 calls for the first and second temperature sensors are spaced by approximately 0.5 inch. This limitation serves the purpose of providing a sensor that is optimally spaced from the housing to minimize heat transfer from the heating element to the housing and to the second sensor. Olmstead does not disclose a specific dimension in regards to the spacing. Nevertheless, Olmstead does have provisions of having sensors spaced apart to minimize heat conduction (col. 3, lines 34-37). To specifically claim a distance of 0.5 inch for that purpose would clearly be experimentally skills of one of ordinary skill in the art and the applicants would optimally reach such a distance. Claim 12 recites the housing defines an outer diameter of approximately 1.2 inches. The claim appears to suggest a housing in a circular configuration. Wherein Olmstead discloses a housing having a rectangular configuration having a specific dimension for accommodating similar elements. Hence, at the time the invention was made it would have been obvious to one having ordinary skill in the art to modify or substitute in the Olmstead a circular opening in place of a square opening with whatever dimensional size for the purpose of fairly and accurately accommodating the sensor elements. Claim 13 calls for the electrical components further include a heating element positioned in close proximity to the first temperature sensor for heating the first temperature sensor. Olmstead discloses each electrical component comprising heating and temperature sensitive elements (col. 2, lines 57-60).

Hence, at the time the invention was made it would have been obvious to one having ordinary skill in the art to have a heating element positioned in close proximity to the first temperature sensor for the purpose of heating the first temperature sensor;

Claim 16: Olmstead discloses insulating material 48 disposed within the compartment (Fig. 1) below the flexible substrate such that the electrical components are embedded within the insulating material (col. 2, lines 17-21);

Claims 17, 32: Mickler differs from Olmstead with the recitations of a processor electrically connected to the temperature sensors, the processor adapted to: monitor signals from the temperature sensors, determine current temperature readings at the temperature sensors based upon the monitored signals, determine an airflow state within the air handling system based upon a difference between the determined current temperatures (DT) and a rate of change in DT. Mickler discloses a processor 53 electrically connected to the temperature sensors (35, 37), the processor adapted to: monitor signals from the temperature sensors (col. 4, lines 60 thru col. 5, line 5), determine current temperature readings (col. 4, lines 66 thru col. 5, line 1) at the temperature sensors based upon the monitored signals (col. 4, lines 59-63;col. 5, lines 1-5), determine an airflow state within the air handling system based upon a difference between the determined current temperatures (DT) and a rate of change in DT (col. 5, lines 5, 6) for the purpose of providing a thermal fluid flowmeter wherein the velocity of the flowing fluid is calculated (col. 2, lines 5-8).

Claims 4, 5, 31 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olmstead in view of Mickler as applied to claims 1, 17, 32 above, and

further in view of Elmore, US Patent 6,234,241. Claims differ from the modified Olmstead with the recitations of the housing is configured to be selectively secured to an ultraviolet air treatment device and wherein the housing includes a plurality of legs extending opposite the top face, the legs configured for attachment to the ultraviolet air treatment device. Elmore discloses the housing is configured to be selectively secured to an ultraviolet air treatment device 73 for the purpose of preventing growth of microorganisms, mold, algae, bacteria and viruses, and prevents the collection of allergens (col. 4, lines 56-59). With respect to claim 5, Elmore discloses correcting the temperature of inside air (col. 1, line 29), a heat exchanger (col. 1, line 49), heated and cooled air flow (col. 1, line 61), and heat transfer between the air and coils (col. 1, lines 65, 66). These disclosures are suggestive of some type of sensing element located within the air handler. Elmore is silent about any specific type of sensing element, the structure of the element and a means of attachment for the element within the air handler. Nevertheless, one having ordinary skill in the art would have found it obvious to have a sensing element located within the air handler and the element would be attached within the air handler using parts of the sensing element, i.e., a plurality of legs. Accordingly, it would have been obvious to one having ordinary skill in the art to have the housing is configured to be selectively secured to an ultraviolet air treatment device and wherein the housing includes a plurality of legs in the modified Olmstead as suggested by Elmore for the purpose of preventing growth of microorganisms, mold, algae, bacteria and viruses, and prevents the collection of allergens (col. 4, lines 56-59).

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Olmstead in view of Mickler as applied to claims 1 & 13 above, and further in view of Olmstead, US Patent 3,942,378. The claim differs from the modified Olmstead with the recitation of a heating element is positioned between the first and second temperature sensors. Olmstead '378 discloses a heating element 20 is positioned between the first and second temperature sensors (32, 30) for the purpose of providing a fluid flow measuring system utilizing semiconductor heating elements and semiconductor temperature sensitive elements in which the system produces an electrical output signal which is linearly proportional to the rate of flow of a fluid and automatically compensates for changes in fluid density without the need for external pressure and temperature sensors (col. 1, lines 4-11). It would have been obvious to one having ordinary skill in the art to have a heating element is positioned between the first and second temperature sensors in the modified Olmstead as suggested by Olmstead '378 for the purpose of providing a fluid flow measuring system utilizing semiconductor heating elements and semiconductor temperature sensitive elements in which the system produces an electrical output signal which is linearly proportional to the rate of flow of a fluid and automatically compensates for changes in fluid density without the need for external pressure and temperature sensors (col. 1, lines 4-11).

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Olmstead in view of Mickler, as applied to claims 1 & 13 above, and further in view of Inushima et al., US Patent 6,550,325. Claim 15 differs from the modified Olmstead with the recitation of the first and second temperature sensors are thermistors.

Inushima et al. discloses a thermistor refers to a semiconductor having temperature coefficient of resistance; and such devices are collectively known as temperature sensing elements (col. 1, lines 39-49) for the purpose to providing a device in which its resistance changes with temperature (col. 1, lines 43, 44). It would have been obvious to one having ordinary skill in the art to have the first and second temperature sensors as thermistors in the modified Olmstead as suggested by Inushima et al. for the purpose to providing a device in which its resistance changes with temperature (col. 1, lines 43, 44).

Claims 18-29 and 33-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olmstead in view of Mickler, as applied to claims 17 & 32 above, and further in view of Bonne et al., US Patent 6,019,505. Claims differ from the modified Olmsteam with the recitation of a processor adapted to process measurements, including lag temperature differential values, made by the electrical components and from such provide parameters which is indicative of whether or not airflow is present. Claims 18, 26, 29, 33, 41, 44: Bonne et al. is suggestive of a processor 400 adapted to generate a temperature rate of change value (col. 8, lines 29-31) based upon a difference between DT, i.e., determined current temperature, and a lag temperature differential value (col. 8, lines 37-40, 53-55, col. 9, lines 3-7); and compare the temperature rate of change value with at least one threshold value, i.e., a reference parameter, (col. 8, lines 32-34) to detect the presence of airflow (col. 7, lines 30-32, 39-42), i.e., the determination of the thermal diffusivity is for when airflow is not present and the determination of the thermal conductivity is for when airflow is present;

Claims 19, 34: Bonne et al. is suggestive of a processor 400 further adapted to generate the lag temperature differential value as a function of DT and a sensor lag parameter (col. 8, lines 29-31, 37-40, 53-55, & col. 9, lines 3-7);

Claims 20, 35, 37: Bonne et al. is suggestive of repeatedly determining selected fluid properties (col. 7, lines 30-32, 39-42) and from such designate whether or not airflow is present. This suggestion makes it obvious to one of ordinary skill in the art that a processor is adapted to continuously update the current temperature readings; and continuously update: DT, the temperature rate of change value, and the lag temperature differential value each time the current temperature readings are updated;

Claims 21, 22, 36: Bonne et al. is suggestive of updated temperature rate of change value is based upon the updated DT and the updated lag temperature differential value and wherein the updated lag temperature differential value is based upon a previous lag temperature differential value because one skilled in the art would find it obvious a processor would use the updated information in order to determine selected fluid properties (col. 7, lines 30-32, 39-42) and from such designate whether or not airflow is present;

Claims 23, 38: Bonne et al. is suggestive of a processor 400 is further adapted to compare the temperature rate of change value with a first threshold (col. 8, lines 29-31) value to designate that airflow is not present (col. 7, lines 30-32, 39-42) and with a second threshold value (col. 8, lines 34, 35) to designate that airflow is present (col. 7, lines 30-32, 39-42);

Claims 24, 25, 39, 40: Bonne et al. is suggestive of a first threshold value (col. 8, lines 29-31) and a second threshold value (col. 8, lines 34, 35) and thus it would be obvious to one of ordinary skill in the art that the first threshold value could be is a positive number and the second threshold value is a negative number, whereby if the temperature rate of change value is greater than the first threshold value, the processor is adapted to designate that airflow is not present or whereby if the temperature rate of change value is less than the second threshold value, the processor is adapted to designate that airflow is present (col. 7, lines 30-32, 39-42);

Claims 27, 28, 42, 43: Bonne et al. is suggestive of the determination of the thermal diffusivity is for when airflow is not present and the determination of the thermal conductivity is for when airflow is present (col. 7, lines 30-32, 39-42), thus it would have made it obvious to one of ordinary skill in the art that the suggestion from Bonne et al. is descriptive of a reference parameter is indicative of operational conditions when the air handling system transitions from an airflow off state to an airflow on state; and wherein the processor is further adapted to update the reference parameter with a current value upon determining that the air handling system has transitioned from an airflow off state to an airflow on state because one skilled in the art would find it obvious a processor would use the updated information in order to determine selected fluid properties (col. 7, lines 30-32, 39-42) and from such designate whether or not airflow is present.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Fencl et al. discloses an ultraviolet air treatment device. Bonne

et al. ('016 & '459) and Kubisiak et al. disclose lag time parameters within a sensing device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ex. Dickens or supervisor, Edward Lefkowitz, the whose telephone numbers are 703-305-7047 or703-308-4816,respectively. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3432 for regular communications and 703-305-3431 for After Final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.

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Cd/dickens
August 24, 2003